

Claims

[c1] What is claimed is:

1.A lifting apparatus comprising:

a support bar extendable across and connectable to a frame;

a power actuator connected to the support bar;

an extendable bar pivotally connected to the support bar; and

a guide bar having a ramp and constructed to engage the extendable bar, the ramp constructed to increase a distance from the extendable bar to the guide bar during extension of the extendable bar.

[c2] 2.The apparatus of claim 1 wherein the ramp increases a rate of incline during extension of the extendable bar.

[c3] 3.The apparatus of claim 1 wherein the ramp has a flat surface mounted to the guide bar and an arcuate surface opposite thereof.

[c4] 4.The apparatus of claim 1 wherein the ramp is generally triangular shaped.

[c5] 5.The apparatus of claim 1 further comprising a first set of wheels attached to a first end of the extendable bar

and constructed to move along the guide bar.

- [c6] 6.The apparatus of claim 5 further comprising a second set of wheels attached to a second end of the extendable bar and constructed to move along a planar surface supporting the frame.
- [c7] 7.The apparatus of claim 6 wherein the extendable bar varies an elevation of at least one of a head end and a foot end of the frame as the first set of wheels move along the guide bar.
- [c8] 8.The apparatus of claim 7 wherein the at least one of a head end and a foot end of the frame is elevated off the floor as the first set of wheels moves away from the power actuator.
- [c9] 9.The apparatus of claim 8 further comprising side guards connected to the frame and configured to be displaced as the elevation varies so as to prevent access to an underneath portion of the frame.
- [c10] 10.The apparatus of claim 1 wherein the power actuator is at least one of a mechanical, an electrical, a hydraulic, and a pneumatic device.
- [c11] 11.A bed comprising:
a frame;

a tilting apparatus connected to the frame and configured to lift an end of the frame, the tilting apparatus comprising:

a transverse frame bar connected to the frame;

a lifting actuator having a retractable shaft and connected to the transverse frame bar;

a pair of guide rails, each having a first end connected to the transverse frame bar and a second end connected to the frame;

a pair of pivot bars each having a first end pivotally connected to the transverse frame bar and a second end; and

a cross member link having a first end pivotally connected to the second end of each of the pivot bars and a second end in contact with each of the guide rails.

[c12] 12.The bed of claim 11 wherein the lifting actuator is remotely controlled.

[c13] 13.The bed of claim 11 further comprising a ramp positioned on each of the pair of guide rails to engage a respective guide wheel.

[c14] 14.The bed of claim 13 wherein the ramp has an arcuate surface to engage the respective guide wheel.

[c15] 15.The bed of claim 11 wherein the cross member link is

connected to the retractable shaft.

- [c16] 16.The bed of claim 15 wherein the retractable shaft is configured to move the cross member link between a minimum position and a maximum position along the pair of guide rails.
- [c17] 17.The bed of claim 16 wherein the retractable shaft is configured to restrict movement of the cross member link along the pair of guide rails when a desired inclined position is reached.
- [c18] 18.The bed of claim 11 wherein the frame accommodates at least one of a twin size mattress, a full size mattress, a queen size mattress, and a king size mattress.
- [c19] 19.The bed of claim 11 comprising no more than one tilting apparatus.
- [c20] 20.The bed of claim 11 further comprising an incline accelerator constructed to increase a rate of inclination as the cross member link moves thereacross.
- [c21] 21.A method of manufacturing a frame tilting apparatus, the method comprising the steps of:
providing a main support bar;
connecting an actuator having a shaft to the main sup-

port bar;

connecting a cross member bar to the shaft, the cross member bar configured to tilt a frame as the cross member bar rotates about a first end thereof; and

connecting a pair of rails to the main support bar, the pair of rails configured to guide a second end of the cross member bar as the cross member bar moves therealong.

[c22] 22.The method of claim 21 further comprising the step of providing a pair of guide wheels connected to the second end of the cross member bar.

[c23] 23.The method of claim 22 further comprising the step of providing a pair of ramps configured to receive the pair of guide wheels and configured to define a distance between the bed frame and the pair of guide wheels as the pair of guide wheels moves therealong.

[c24] 24.The method of claim 21 further comprising the step of providing guard boards configured to inhibit interference with the frame tilting apparatus or a volume defined thereby.

[c25] 25.The method of claim 21 further comprising the step of providing structure to increase a rate of inclination during extension of the cross member bar.

- [c26] 26. A method of inclining a bed comprising:
engaging a first end of an extendable bar to a guide bar
fixedly attached to one end of a bed frame;
engaging a second end of the extendable bar to a floor;
extending the first end of the extendable bar such that
the extendable bar rotates causing a distance between
the first end of the extendable bar and the floor to in-
crease; and
increasing a distance between the first end of the ex-
tendable bar and the guide bar as the first end of the ex-
tendable bar moves along a ramp attached to the guide
bar.
- [c27] 27. The method of claim 26 wherein the step of engaging
the first end of the extendable bar comprises the step of
actuating a power device having an extendable shaft
connected to the extendable bar.
- [c28] 28. The method of claim 27 further comprises actuating
the power device remotely.